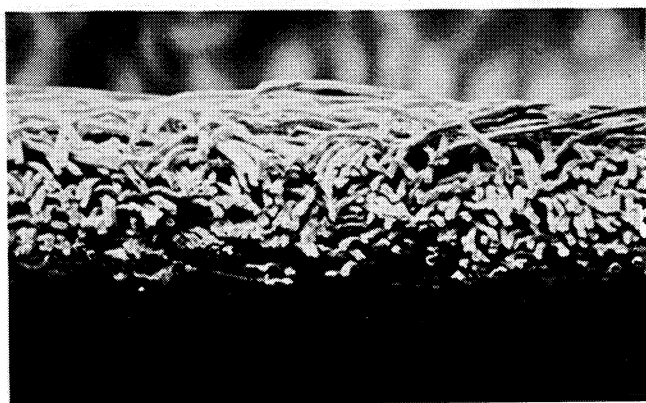
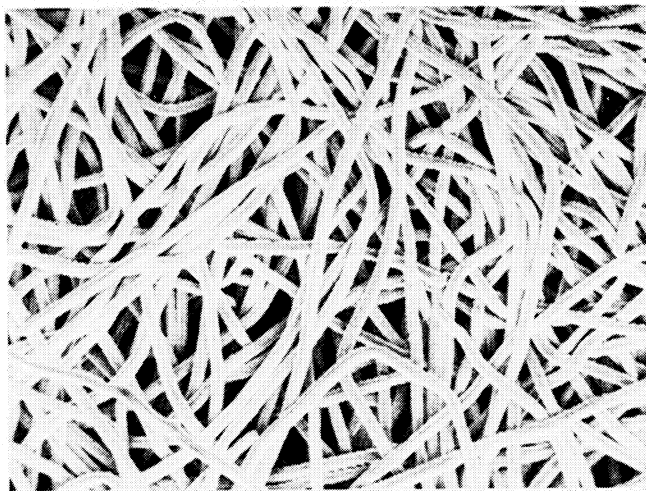


## Metallic Filters



HR Textron, a subsidiary of Textron, Inc. located in Pacoima, California is a major producer of industrial filters through its Filter Products Division. The division supplies equipment for such applications as filtering polyesters and other plastics, removing solids from hydrocarbon streams, water filtering, oil well filtration, removing contaminants from crude feed stocks and filtration of liquid and gas streams in coal liquefaction/gasification processing.

The heart of each HR system is 421 Filter Media, composed of a matrix of ultrafine steel fibers metallurgically bonded and compressed so that the resultant pore structure is locked in place; thus each pore is virtually unchangeable in size for the life of the filter. The upper picture is a photomicrograph top view of 421 filter material; the middle photo is an edge view. The matrix is reinforced with woven wire mesh. To maximize surface area, the medium is pleated (bottom photo) and wrapped onto a stainless steel core; the division also offers unpleated configurations. HR Textron guarantees removal of contaminants down to one micron (millionth of a meter) and states that, for a given filter size and rating, the 421 capillary network holds four times or more contaminants than an ordinary metal filter. The Filter Products Division produces 421 elements in a low pressure series, for applications up to 150 pounds per square inch, and a high pressure series that provides effective filtration up to 6,000 pounds per square inch.

HR's patented 421 Filter Media, described by the company as a major advance in filtration technology, originated in a mid-1960s NASA-sponsored study concerning types of filter media useful in space systems. Conducted for Marshall Space Flight Center by Arthur D. Little Company, the study concluded that spun metal fiber filters offered particular promise for space applications and recommended further research in that area. NASA distributed the study to the filter industry to encourage such effort and HR Textron responded, using the study as a departure point for its own, company-funded development of 421 Filter Media. HR subsequently provided 421 to NASA for use in the Apollo and Saturn launch vehicle programs, then successfully branched out into the non-aerospace market. The company's filter units are used by major companies—such as Du Pont, Eastman Kodak, Dow Chemical and Monsanto—in chemical processing operations; other applications include petrochemical products, pharmaceuticals, industrial hydraulics, pollution control and manufacture of man-made fibers, films and resins.